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Gassed up on sorghum?

Plant shows promise as another source for ethanol

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It's a fall tradition in Hawesville, West Liberty and other Kentucky towns to celebrate the sweet sorghum harvest with a festival of food, music and local crafts.

Researchers say the whole state might soon have an economic reason to celebrate the corn lookalike as a source of ethanol, a gasoline additive that can reduce the nation's demand for oil.

"It has a lot of promise in Kentucky," says Mike Montross, an agricultural engineer at the University of Kentucky. "I think it should be good for the state."

Alltech, the Nicholasville-based biotechnology company, is considering sweet sorghum as a source of the ethanol it plans to produce at a $70 million biorefinery to be built starting next month in Washington County, said spokesman Billy Frey.

"It's definitely one of those (plants) being considered," Frey said. "We are still researching to see which one is best. We aren't ruling anything out right now."

Kentucky's only existing ethanol plant is Commonwealth Agri-Energy in Hopkinsville, which opened in 2004 and uses corn as its main ingredient.

Corn, wheat and other grains are often used in the United States to make ethanol, but the practice has drawn fire recently because critics say it drives up grain prices and contributes to world food shortages.

When it begins production in 12 to 18 months, the Alltech biorefinery is expected to use grain for about 70 percent of its production, Frey said.

Beginning by year two, however, the Alltech subsidiary operating the plant, Ecofin LLC, will begin increasing the non-grain cellulose material until it "ultimately" reaches 100 percent, Frey said.

The transition to cellulose is required under a $30 million grant from the U.S. Department of Energy that Alltech received last month for the plant.

Montross, who is part of a UK group working with Alltech on the biorefinery, said the cellulose material could come from the leaves and stalks left after the corn harvest or from grasses, like switch grass, or from sweet sorghum.

All of those potential ingredients are available in the counties around the plant and could be obtained through contracts with farmers.

Sweet sorghum, which is grown primarily in the Midwest and South, is processed into a molasses-like syrup that is sold in stores. It is also used in livestock feed.

Sugar cane, on the other hand, needs a warm, wet -- almost tropical -- climate and so is primarily grown in only the most southern states.

Overall, sweet sorghum is now a "pretty minor" crop in Kentucky, Montross said.

"The (U.S.) Department of Energy is actually putting quite a bit of money into sweet sorghum now because it's similar to sugar cane," he said. "You squeeze the stalk and you get lots of juice that has a high sugar content," which makes sweet sorghum ideal to be distilled into ethanol.

Sweet sorghum has a better sugar yield than corn and other grains, and it needs less water and nitrogen to grow, Montross said. Other researchers say it also requires less electricity than grains to produce ethanol with sorghum juice.

"I think there is a lot of promise for sorghum," Montross said, "although there are some hurdles."

Sweet sorghum's high water content makes it difficult and costly to transport. In addition, it must be used almost immediately after it is harvested, generally in September and October. The juice cannot be stored long. It begins losing its sugar content after about 24 hours.

Researchers at UK and elsewhere are working on these problems and others so sweet sorghum can become a more important Kentucky product, Montross said.

"We are going to try to help make sure farmers can produce and deliver whatever the biomass source (for ethanol) is going to be," he said. "We are trying to minimize their costs and make sure they can do it efficiently. We are working with the (U.K.) Center for Applied Energy Research to try to improve the whole process."

The U.S. currently has no refineries that make ethanol exclusively from cellulose, and Alltech's Washington County facility could become the first.

The $70 million plant would produce about 10 million gallons of ethanol a year, which is small compared with the national average of 100 million gallons for ethanol plants, Frey said.

"We wanted it to be small enough so it wouldn't harvest everything in the surrounding area and be replicable," he explained. Alltech envisions a network of small refineries to be built eventually around the state.

Nationally, several companies have developed business plans for refineries that would make ethanol out of sweet sorghum.

They include Renergie Inc., a Florida company that wants to build 10 5-million-gallon plants in Louisiana and later 10 more in Florida, which gave the company a $1.5 million grant last year.

Renergie would blend its ethanol with gasoline at gas station pumps and sell it directly to local motorists to minimize transportation costs, Brian Donovan of Renergie told McClatchy Newspapers.

Renergie plans to use technology developed by Rusni Distillery in India with help from the non-profit International Crops Research Institute for the Semi-Arid Tropics. Rusni began making ethanol last June with sweet sorghum from 791 local farms.

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